New Mexico Agriculture, Food & Natural Resources Course Framework

Environmental Science / Natural Resources (0181)

Suggested Course Length: 180 Days

AFNR Pathway: Natural Resource Systems (NRS), Environmental Service Systems (ESS), Agriscience

Prerequisite: Agricultural Science (0132) Recommended

Instructional Design Philosophy

Environmental Science/Natural Resources is designed to prepare students to understand, manage, conserve, and sustain natural resources through scientific inquiry, environmental stewardship, and applied resource management. Students investigate the relationships among land, water, wildlife, forestry, agriculture, and human populations while developing solutions to environmental challenges.

The **SAE serves as the backbone of instruction**. Students should develop a Natural Resources, Wildlife, Conservation, Environmental Science, Forestry, Water Quality, or Environmental Research SAE that grows throughout the year and culminates in an environmental stewardship portfolio.

Course-at-a-Glance

Quarter	Units	Days
Q1	Units 1-3	45
Q2	Units 4-6	45
Q3	Units 7-9	45
Q4	Units 10-12	45

Unit 1: Introduction to Natural Resources

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Exploring Natural Resources	NRS.01 Natural Resource Systems	Natural Resource Inventory	NMSU Extension	Natural Resources SAE
Types of Natural Resources	NRS.01 Resource Classification	Resource Classification Activity	USDA NRCS	Exploratory SAE
Importance of Natural Resources	NRS.01 Resource Management Principles	Resource Impact Analysis	Conservation Organizations	Environmental Leadership SAE

Unit Assessment

- Natural Resource Inventory Project
- Resource Management Portfolio

Unit 2: Ecology and Ecosystems

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Understanding Ecology	ESS.01 Ecosystem Relationships	Ecosystem Investigation	Project Learning Tree	Research SAE
Ecosystem Components	ESS.01 Ecological Principles	Ecosystem Model	Environmental Education Resources	Wildlife SAE
Human Impacts on Ecosystems	ESS.01 Human-Environment Interactions	Impact Assessment	EPA Education Resources	Environmental Research

Unit Assessment

- Ecosystem Analysis
- Ecological Relationship Project

Unit 3: Conservation and Sustainable Resource Management

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Natural Resource Conservation	NRS.02 Conservation Practices	Conservation Plan	NRCS Resources	Conservation SAE
Human Demands on Resources	NRS.02 Sustainable Management	Resource Use Analysis	Environmental Case Studies	Stewardship SAE
Sustainability Principles	ESS.01 Environmental Stewardship	Sustainability Project	Sustainable Agriculture Resources	Community Research SAE

Unit Assessment

- Conservation Management Plan
- Sustainability Presentation

Unit 4: Careers in Natural Resources

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Natural Resources Careers	CRP.01 Career Planning & Management	Career Investigation Report	AgCareers	Career Exploration SAE
Postsecondary Opportunities	CRP.01 Career Development	Career Pathway Plan	Universities and Technical Schools	College Readiness
Industry Certifications	CRP.07 Career Preparation	Certification Research Project	Industry Associations	Workforce Development

Unit Assessment

- Career Portfolio
- Career Pathway Presentation

Unit 5: Recycling and Solid Waste Management

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Understanding Recycling	ESS.02 Waste Management Systems	Recycling Audit	EPA Resources	Environmental SAE
Environmental Impact of Waste	ESS.02 Pollution Prevention	Waste Stream Analysis	Local Recycling Programs	Community Service SAE
Sustainable Waste Practices	ESS.02 Resource Recovery	Recycling Improvement Plan	Municipal Programs	Service Learning Project

Unit Assessment

- Recycling Audit Project
- Waste Reduction Plan

Unit 6: Water Resources and Watersheds

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Water Cycle	ESS.01 Environmental Systems	Water Cycle Model	Water Education Foundation	Environmental SAE
Water Uses	NRS.02 Water Resource Management	Water Use Investigation	Extension Resources	Natural Resources SAE
Watershed Management	NRS.02 Resource Stewardship	Watershed Assessment	NRCS and Watershed Groups	Research SAE

Unit Assessment

- Watershed Study
- Water Resource Portfolio

Unit 7: Water Quality and Pollution

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Water Sources and Quality Standards	ESS.02 Environmental Monitoring	Water Quality Analysis	State Water Agencies	Water Quality SAE
Conducting Water Quality Tests	BS.01 Scientific Investigation	Water Testing Lab	Water Testing Kits	Agriscience SAE
Groundwater Contamination	ESS.02 Environmental Risk Analysis	Contamination Investigation	Environmental Protection Resources	Research SAE

Unit Assessment

- Water Quality Monitoring Project
- Groundwater Contamination Case Study

Unit 8: Air Quality and Atmospheric Resources

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Air Pollution Sources	ESS.02 Pollution Assessment	Pollution Source Inventory	EPA Air Quality Resources	Environmental Research SAE
Industrial Air Pollution	ESS.02 Environmental Impact Analysis	Industry Emissions Study	Environmental Case Studies	Community Research
Human Health Impacts	ESS.01 Human-Environment Relationships	Air Quality Report	Public Health Resources	Environmental Advocacy

Unit Assessment

- Air Quality Investigation
- Pollution Reduction Proposal

Unit 9: Wildlife Conservation

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
History of Wildlife Conservation	NRS.04 Wildlife Resource Management	Wildlife Conservation Timeline	Wildlife Agencies	Wildlife SAE
Species Endangerment	NRS.04 Species Management	Endangered Species Study	U.S. Fish and Wildlife Service	Research SAE
Wildlife Habitat Importance	NRS.04 Habitat Conservation	Habitat Evaluation Project	Conservation Organizations	Conservation SAE

Unit Assessment

- Wildlife Conservation Portfolio

Unit 10: Forest Resources and Wildfire Management

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Forest Resource Management	NRS.03 Forest Resource Management	Forest Inventory	U.S. Forest Service	Forestry SAE
Wildfire Causes and Impacts	NRS.03 Forest Protection	Wildfire Case Study	Forestry Resources	Environmental Science SAE
Fire Prevention Strategies	NRS.03 Resource Stewardship	Community Fire Plan	State Forestry Division	Community Leadership SAE

Unit Assessment

- Wildfire Mitigation Plan
- Forest Management Project

Unit 11: Environmental Pollution and Agricultural Stewardship

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Environmental Pollution Sources	ESS.02 Pollution Prevention	Pollution Assessment	EPA Resources	Agriscience SAE
Agricultural Pollution	ESS.02 Environmental Management	Agricultural Pollution Study	USDA-NRCS	Agricultural Research SAE
Preventing Agricultural Pollution	ESS.02 Best Management Practices	BMP Development Project	Conservation Districts	Stewardship SAE

Unit Assessment

- Agricultural Pollution Prevention Plan

Unit 12: Environmental Science Capstone

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Natural Resource Management	NRS.01-NRS.04 Systems Integration	Resource Management Plan	Industry Partners	Environmental SAE
Environmental Stewardship	ESS.01-ESS.02 Environmental Systems	Stewardship Project	Conservation Organizations	Research SAE
Scientific Investigation	BS.01 Scientific Inquiry	Research Project	Science Resources	Agriscience Fair
Community Impact	CRP.04 Communication Skills	Public Presentation	FFA Environmental/Natural Resources Resources	Leadership Development

Capstone Assessment

Students develop and present a complete **Environmental Science & Natural Resources Portfolio** including:

1. Natural Resource Inventory
2. Ecosystem Investigation
3. Conservation Management Plan
4. Water Quality Project
5. Air Quality Investigation
6. Wildlife Conservation Study

7. Forest Resource Project
8. Agricultural Pollution Prevention Plan
9. SAE Documentation
10. Environmental Stewardship Presentation

SAE Backbone Model

Quarter	SAE Milestone
Q1	Establish conservation, wildlife, forestry, or environmental SAE
Q2	Conduct resource inventories and environmental investigations
Q3	Implement conservation and monitoring projects
Q4	Complete capstone environmental stewardship project

End Goal

Every student completes a documented Natural Resources or Environmental Science SAE while developing competencies in:

- Resource Conservation
- Ecosystem Management
- Water Quality Monitoring
- Wildlife Conservation
- Forestry Management

- Environmental Stewardship
- Pollution Prevention
- Scientific Investigation
- Sustainable Resource Management

This course serves as New Mexico's primary Natural Resources and Environmental Science pathway course, preparing students for careers in conservation, wildlife management, forestry, environmental science, water resources, sustainability, and environmental policy.